



Date:December 08,2010

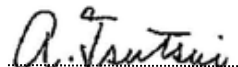
Sanyo Test Report

Name of Sample	Lithium Ion Battery 3UR18650-2-T0712
Consignor	SANYO Energy(Suzhou) CO.,LTD
Manufacturer	SANYO Energy(Suzhou) CO.,LTD
Test Method	United Nations "Recomenndations on the TRANSPORT OF DANGEROUS GOODS"
Criterion	United Nations "Recomenndations on the TRANSPORT OF DANGEROUS GOODS"
Appearance	Black rectangular parallelepiped
Test Date	2010/01/07 - 2010/01/22
Sample Number	24
Test Items	Altitude simulation, Thermal test, Vibration test, Shock test, External short circuit, Overcharged
Conclusion	The sample has passed the items of UN38.3.
Remark	Certification by Similar Model: 3UR18650-2-T0627 Ratio of (3UR18650-2-T0712)/(3UR18650-2-T0627) [+]=100%, [-]=100%, [Electrolyte]=100%
Consignor Address	No.86 Sunwu Road, Xukou, Wuzhong District, Suzhou City, Jiangsu Province 215164, China

Sanyo Energy(Suzou) Co.,Ltd.



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Date:December 08,2010

B: Checklist for Judging New Type Battery or not

Confirmation of presence of change in “The element which is given influence”

(Change ⇒ ○、No change ⇒ —)

When there is no change in all items, it is NOT considered to be a New Type Battery.


Model which UN regulation test has completed	3UR18650-2-T0627
Target model which is not a new type	3UR18650-2-T0712

Test Item (Function)	The element which is given influence	Presence of change
T1:Altitude Simulation (Decompression load)	<ul style="list-style-type: none"> •Crimped part, Gasket (Cell) •Gas Release Vent, Cell Case (Cell) •Pack (Plastic) Case •Holding Member(Insulator, Insulation Tape, Both Sides Tape) •Coating materials 	—
T2:Thermal Shock (Repetition of high temp. and low temp.)	<ul style="list-style-type: none"> •Crimped part, Gasket (Cell) •Gas Release Vent, Cell Case (Cell) •Finished state of Wound Electrodes (Cell) •Pack (Plastic) Case •Holding Member(Insulator, Insulation Tape, Both Sides Tape) •Coating materials 	—
T3:Vibration (Vibration load)	<ul style="list-style-type: none"> •Finished state of Wound Electrodes (Cell) •Electric wiring member •Electronic Parts on a circuit board •Cell Holding Member (Adhesive, Both Sides Tape, Lib of Plastic Case) 	—
T4: Shock(Shock load)	<ul style="list-style-type: none"> •Wiring Member •Electronic Parts on a circuit board •Cell Holding Member(Adhesive, Both Sides Tape, Lib of Plastic Case) •Finished state of Wound Electrodes (Cell) 	—
T5:External Short Circuit(Short current)	<ul style="list-style-type: none"> •Over-voltage Protection •Current Control Device •Safety Device of cell (Cell) •Lead Tab 	—
T6(Cell):Impact(Crash load)	<ul style="list-style-type: none"> •Separator (Cell) •Insulation State in a cell (Cell) 	—
T7(Pack): Overcharge(Charge load)	<ul style="list-style-type: none"> •Overcharge Protection •Thermal Device •Safety Device of cell (Cell) 	—
Judgment result	New Type or not	New (Not new)

Sanyo Energy(Suzou) Co.,Ltd.



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Certificate of UN test for Lithium ion battery

Customer Model : AS11A3E
 Sanyo Model : 3UR18650-2-T0712
 Sanyo Product Code : F12431154

Sanyo Energy(Suzhou)Co., Ltd.

Morina Kenichi Senior Manager



Manual of Tests and Criteria (38.3 Lithium batteries)		Test results	Note	Number of test batteries			
No.	Test item						
T 1	Altitude simulation	Pass		First cycle fully charged 4 batteries	First cycle fully Discharged 4 batteries	After 50 cycles fully charged 4 batteries	After 50 cycles fully discharged 4 batteries
T 2	Thermal test	Pass					
T 3	Vibration	Pass					
T 4	Shock	Pass					
T 5	External short circuit	Pass					
T 6	Impact	Pass		First cycle 50% charged 5 cells for cylindrical cell, 10 cells for prismatic cell, 5 cells for coin cell.		After 50 cycles,fully discharged 5 cells for cylindrical cell, 10 cells for prismatic cell, 5 cells for coin cell.	
T 7	Overcharge	Pass	For battery only	First cycle fully charged 4 batteries		After 50 cycles,fully charged 4 batteries	
T 8	Forced discharge	-	For cell only	For cell only			

Lithium ion battery Specification

Item	Nominal value	Note
Watt-hour rating	66 Wh	
Nominal voltage	11.1 V	
Lithium equivalent content	5.4 g	

We declare the above : The test result mentioned above was checked according to UN test.
 (Manual of Tests and Criteria ST/SG/AC.10/11/Rev.4, PartIII, sub-section 38.3)

Certificate of Package Drop Test for Lithium ion battery

Customer Model : AS11A3E
 Sanyo Model : 3UR18650-2-T0712
 Sanyo Product Code : F12431154



Test item	Test results	Note
Package Drop Test	Pass	The package shall be dropped from 1.2meter high onto a concrete surface (flat and horizontal) with five orientations (drop once a sample); (1)flat on the bottom,(2)flat on the top,(3)flat on the long side, (4)flat on the short side, (5)on a corner

Lithium ion battery Specification

Item	Nominal value	Note
Watt-hour rating	66 Wh	
Nominal voltage	11.1 V	
Lithium equivalent content	5.4 g	

We declare the above : The test result mentioned above was checked according to UN test.
 (Model Regulations ST/SG/AC.10/1/Rev.15, Special Provision188)

UN Test Data (Model:3UR18650-2-T0712)

1.Test Item: External short circuit (T5)

P.7/10

2.Test Purpose: This test simulates an external short circuit.

3.Test Procedure:

The cell or battery to be tested shall be temperature stabilized so that its external case temperature reaches $55\pm 2^{\circ}\text{C}$ and then the cell or battery shall be subjected to a short circuit condition with a total external resistance of less than 0.1ohm at $55\pm 2^{\circ}\text{C}$. This short circuit condition is continued for at least one hour after the cell or battery external case temperature has returned to $55\pm 2^{\circ}\text{C}$. The cell or battery must be observed for a further six hours for the test to be concluded.

SANYO Internal Procedure:

As above.

4.Test Requirements:

External temperature of test batteries does not exceed 170°C and there is no disassembly, no rupture and no fire within six hours of this test.

5.Test Date: 2010/1/21-2010/1/22

6.Test Data

Battery No.		Maximum temperature ($^{\circ}\text{C}$)	Other event	Result	Judgement
At first cycle, in fully charged states	1	54.9	0	PASS	PASS
	2	54.7	0	PASS	
	3	54.9	0	PASS	
	4	54.8	0	PASS	
At first cycle, in fully discharged states	5	54.9	0	PASS	
	6	54.7	0	PASS	
	7	54.9	0	PASS	
	8	54.7	0	PASS	
After 50 cycles ending in fully charged states	9	54.8	0	PASS	
	10	54.6	0	PASS	
	11	54.6	0	PASS	
	12	54.3	0	PASS	
After 50 cycles ending in fully discharged states	13	54.7	0	PASS	
	14	54.3	0	PASS	
	15	54.6	0	PASS	
	16	54.3	0	PASS	

Notes: D-Disassembly, R-Rupture, F-Fire, 0-No disassembly, no rupture & no fire

UN Test Data (Model:3UR18650-2-T0712)

1.Test Item:Impact (T6)

P.8/10

2.Test Purpose: This test simulates an impact.

3.Test Procedure:

The test sample cell or component cell is to be placed on a flat surface. A 15.8mm diameter bar is to be placed across the center of the sample. A 9.1kg mass is to be dropped from a height of 61 ± 2.5 cm onto the sample.

A cylindrical or prismatic cell is to be impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the 15.8mm diameter curved surface lying across the centre of the test sample. A prismatic cell is also to be rotated 90 degrees around its longitudinal axis so that both the wide and narrow sides will be subjected to the impact. Each sample is to be subjected to only a single impact. Separate samples are to be used for each impact. A coin or button cell is to be impacted with the flat surface of the sample parallel to the flat surface and the 15.8mm diameter curved surface lying across its center.

SANYO Internal Procedure:

As above.

4.Test Requirements:

External temperature of test batteries does not exceed 170°C and there is no disassembly and no fire within six hours of this test.

5.Test Date:2009/10/21

6.Test Data:

Cell No.	Maximum Temperature($^{\circ}\text{C}$)	Other event	Result	Judgement
At first cycle, 50% charged states	1	120	0	PASS
	2	126	0	PASS
	3	122	0	PASS
	4	135	0	PASS
	5	139	0	PASS
	6		0	
	7		0	
	8		0	
	9		0	
	10		0	
After 50 cycles ending, in fully discharged states	11	43	0	PASS
	12	40	0	PASS
	13	45	0	PASS
	14	42	0	PASS
	15	41	0	PASS
	16			
	17			
	18			
	19			
	20			

Notes: D-Disassembly, F-Fire, 0-No disassembly & no fire

UN Test Data (Model:3UR18650-2-T0712)

1.Test Item:Overcharge (T7)

P.9/10

2.Test Purpose: This test evaluates the ability of a rechargeable battery to withstand an overcharge condition.

3.Test Procedure:

The charge current shall be twice the manufacturer's recommended maximum continuous charge current.

The minimum voltage of the test shall be as follows:

- (a) when the manufacturer's recommended charge voltage is not more than 18V, the minimum voltage of the test shall be the lesser of two times the maximum charge voltage of the battery or 22V.
- (b) when the manufacturer's recommended charge voltage is more than 18V, the minimum voltage of the test shall be 1.2 times the maximum charge voltage.

Tests are to be conducted at ambient temperature. The duration of the test shall be 24 hours.

SANYO Internal Procedure:

Min.Charge Voltage:	22V
Charge Current:	3.6A

4.Test Requirements:

There is no disassembly and no fire within seven days of the test.

5.Test Date: 2010/1/12-2010/1/20

6.Test Data

Battery No.	Event	Result	Judgement
At first cycle in fully charged states	1	0	PASS
	2	0	PASS
	3	0	PASS
	4	0	PASS
After 50 cycles ending in fully charged states	5	0	PASS
	6	0	PASS
	7	0	PASS
	8	0	PASS
PASS			

Notes: D-Disassembly, F-Fire, 0-No disassembly & no fire

UN Test Data (Model:3UR18650-2-T0712)

1.Test Item: Drop Test

P.10/10

2.Test Purpose: This test simulates the drop of the packaging during transport.

3.Test Procedure:

Number of Test Samples (Per design type, Manufacturer) and Drop Orientation For other than flat drops the centre of gravity must be vertically over the point of impact. Where more than one orientation is possible for a given drops, the orientation most likely to result in failure of the packaging must be used.

Packaging	Number of test samples	Drop orientation
Boxes of natural wood Plywood boxes Reconstituted wood boxes Fibreboard boxes Plastic boxes Steel or aluminum boxes Composite Packagings which are in the shape of a box.	Five (one for each drop)	First drop: flat on the bottom Second drop: flat on the top Third drop: flat on the long side Fourth drop: flat on the short side Fifth drop: on a corner

SANYO Internal Procedure:

Packaging: Fiberboard boxes. Number of test samples: Five(one for each drop). It may do the drop of five orientations with one sample if the packing does not have the big damage.

Drop orientation: As above.

4.Test Requirements:

A Package passes the test if it meets the following criteria:

Each package is capable of withstanding a 1.2 meter drop test in any orientation without damage to cells or batteries contained therein, without shifting of the contents so as to allow battery to battery (or cell cell) contact and without release of contents.

5.Test Date: 2010/12/8

6.Test Data: PASS(Drop height 1.2m)

6-1. No any package crack

6-2. No any cell damage and battery damage.

6-3. No any out side release of contents from shipping box

6-4. No any contact between battery and battery, cell and cell.

Packaging size:
284*176*350 mm
Packaging weight (before):
6.5 kg
Packaging weight (after):
6.5 kg